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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,662	01/13/2006	Peng Yin	PU030209	1711

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EXAMINER	
SORRELL, ERON J	

ART UNIT	PAPER NUMBER
2182	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/564,662	YIN ET AL.	
	Examiner	Art Unit	
	ERON J. SORRELL	2182	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/13/06;6/26/086/28/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,2,5,8-13, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kok (U.S. Patent No. 6,757,330).

3. Referring to claims 1 and 13, Kok teaches a system and method for encoding video signal data for an image block, the method comprising:

receiving a substantially uncompressed image block (see lines 50-52 of column 1);

block matching the image block in correspondence with at least one particular reference picture while excluding non-optimal search points in accordance with a comparison of a normalization of the image block pixels against a normalization of the reference picture pixels (see paragraph bridging columns 1 and 2);

computing motion vectors corresponding to a difference between the image block and the at least one particular reference picture (see lines 40-46 of column 3); and

motion compensating the at least one particular reference picture in correspondence with the motion vectors (see paragraph bridging columns 3 and 4).

4. Referring to claim 2, Kok teaches testing within a search region for displacements within a pre-determined range of offsets relative to the image block while excluding non-optimal search points in accordance with a comparison of a normalization of the image block pixels against a normalization of the reference picture pixels (see lines 30-44 of column 4); calculating at least one of a sum of the absolute difference, a sum of the square difference, and a mean squared error of each pixel in the image block with a motion compensated reference picture; and selecting the offset with the lowest calculated sum of the absolute difference, sum of the square difference, or mean squared error as the motion vector (see lines 30-44 of column 4).

5. Referring to claims 5, Kok teaches a method for processing video signal data for an image block, the method comprising

encoding as defined in claim 1 and decoding, the decoding comprising: receiving at least one reference picture index with the data for the image block, each corresponding to a particular reference picture; retrieving a reference picture corresponding to each of the received at least one reference picture index; and motion compensating the retrieved reference picture to form a motion compensated reference picture (see lines 3-19 of column 7).

6. Referring to claims 8 and 12, Kok teaches the video signal data is streaming video signal data comprising block transform coefficients (see lines 1—31 of column 1).

7. Referring to claim 9, Kok teaches a video CODEC comprising a video encoder as defined in claim 1 and a video decoder for decoding video signal data for an image block and at least one particular reference picture index to predict the image block, the decoder comprising a motion compensator having an output for determining a block corresponding to the particular reference picture index (see lines 3-19 of column 7).

8. Referring to claim 10 and 19, Kok teaches a variable length decoder in signal communication with the motion compensator for

providing the particular reference picture index to the motion compensator (see item 512 connected to motion compensator 510 in figure 5).

9. Referring to claims 11 and 20, Kok teaches the motion compensator is for providing motion compensated reference pictures responsive to the fast search block motion estimator (see item 510 in figure 5).

10. Referring to claim 17, Kok teaches the fast search block matching portion comprises at least one of a sum of the absolute difference calculator, a sum of the square difference calculator, and a mean squared error calculator for performing normalization (see paragraph bridging columns 6 and 7).

11. Referring to claim 18, Kok teaches a reference picture store in signal communication with the fast search block motion estimator for providing the at least one particular reference picture and a corresponding particular reference picture index (see item 140 in figure 1).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 3,4,6,7, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kok in view of Hsu (U.S. Patent No. 6,757,330).

14. Referring to claim 3, Kok teaches the method as defined in claim 1, as shown above, however Kok fails to teach the block matching comprises storing a normalization of the current picture and reusing the stored normalization when the current picture is used as a reference picture for coding another picture.

Hsu teaches, in a system for performing motion estimation, storing a normalization of the current picture and reusing the stored normalization when the current picture is used as a reference picture for coding another picture (see lines 11-24 of column 8).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the teachings of Kok with the above teachings of Hsu in order to optimize the estimation/compensation process as suggested by Hsu (see lines 26-28 of column 3).

15. Referring to claims 4 and 15, Kok teaches the method as defined in claim 1 and the system of claim 13 as shown above, but fails to teach storing a normalization of the smallest block size; and reusing the stored normalization for larger block sizes.

Hsu teaches, in a system for performing motion estimation, storing a normalization of the smallest block size; and reusing the stored normalization for larger block sizes (see lines 11-24 of column 8)

It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to modify the teachings of Kok with the above teachings of Hsu for the same reasons as mentioned above in the rejection of claim 3.

16. Referring to claims 6 and 16, Kok teaches the method as defined in claim 5 and the system of claim 13, but fails to

adding the motion compensated reference picture to the data for the image block to predict the image block.

Hsu teaches, in motion estimation system, adding the motion compensated reference picture to the data for the image block to predict the image block (see lines 25-44 of column 5).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the teachings of Kok with the above teachings of Hsu in order to optimize the estimation/compensation process as suggested by Hsu (see lines 26-28 of column 3).

17. Referring to claim 7, Hsu teaches storing the predicted image block as a reference picture for future retrieval (see lines 25-44 of column 5).

It would have been obvious to one of ordinary skill in the art at the time of the applicant’s invention to modify the teachings of Kok with the above teachings of Hsu for the same reasons as mentioned above in the rejection of claim 6.

18. Referring to claim 14, Kok teaches a video encoder as defined in claim 13, however Kok fails to teach the fast search block matching portion comprises at least one of a data reuse portion and a successive elimination portion.

Hsu teaches, in motion estimation system, the fast search block matching portion comprises at least one of a data reuse portion and a successive elimination portion (see lines 25-44 of column 5).

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the teachings of Kok with the above teachings of Hsu in order to optimize the estimation/compensation process as suggested by Hsu (see lines 26-28 of column 3).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERON J. SORRELL whose telephone number is (571)272-4160. The examiner can normally be reached on Monday-Friday 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Tariq Hafiz can be reached on 571-272-6729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eron J Sorrell/
Examiner, Art Unit 2182
June 21, 2008